

# **The 8th The International Conference on Big data, IoT, and Cloud Computing(BIC 2024)**

August 12-14, 2024  
Hanoi, Vietnam

**Organized by**  
**KCIA & SUT**

## **2024 International Conferences**

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### **The 17h International Conference on Computer Science and its Applications(CSA 2024)**

- Dec 18-20, 2024

- <http://www.csa-conference.org/2024/>

## Message from the BIC 2024 General Chair

The 2024 International Conference on Big data, IoT, and Cloud Computing will be held in Hanoi, Vietnam, August 12-14, 2024. The BIC 2024 is the newly renamed conference from highly successful series of the International Conference on Ubiquitous Computing Application and Wireless Sensor Network (UCAWSN) - 4th UCAWSN (July, 2016), 3rd UCAWSN (July, 2015), 2nd UCAWSN (July, 2014), and 1st UCAWSN (July, 2013) since 2013. The BIC 2024 will be the most comprehensive conference focused on Big data, IoT, and Cloud Computing (BIC). The BIC 2024 will provide an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of BIC such as model, algorithms, applications, services, performance and reliability for Big data, IoT, Cloud Computing. Also, the conference will publish high-quality papers which are closely related to the various theories and practical applications in Big data, IoT, and Cloud computing. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in those important subjects. Accepted and presented papers highlight new trends and challenges of Computer Science and its Applications. The presenters showed how new research could lead to novel and innovative applications. We hope you will find these results useful and inspiring for your future research.

We would like to express our sincere thanks to Doo-soon Park (SoonChunHyang University, Korea), James J. (Jong Hyuk) Park (SeoulTech, Korea), and Young-Sik Jeong (Dongguk University, Korea). Our special thanks go to the Program Chairs, all Program Committee members and all the additional reviewers for their valuable efforts in the review process, which helped us to guarantee the highest quality of the selected papers for the conference. We cordially thank all the authors for their valuable contributions and the other participants of this conference. The conference would not have been possible without their support. Thanks are also due to the many experts who contributed to making the event a success.

BIC 2024 General Chairs

Jungho Kang, Baewha Women's University, Korea

Han-Chieh Chao, National Ilan University, Taiwan

Qun Jin, Waseda University, Japan

Yi Pan, Georgia State University, USA

Hoang Viet Ha, Swinburne University of Technology, Vietnam

## Message from the BIC 2024 Program Chairs

Welcome to the BIC 2024 which will be held in Hanoi, Vietnam on August 12-14, 2024. The BIC 2024 provides an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of Computer Science. In addition, the conference contains high quality papers which are closely related to the various theories and practical applications in Computer Science. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in this important subject. The BIC 2024 contains high quality research papers submitted by researchers from all over the world. Each submitted paper was peer reviewed by reviewers who are experts in the subject area of the paper. Based on the review results, the Program Committee accepted papers.

For organizing an International Conference, the support and help of many people is needed. First, we would like to thank all authors for submitting their papers. We also appreciate the support from program committee members and reviewers who carried out the most difficult work of carefully evaluating the submitted papers. We would like to give my special thanks to Doo-soon Park (SoonChunHyang University, Korea), James J. (Jong Hyuk) Park (SeoulTech, Korea), Young-Sik Jeong (Dongguk University, Korea) as the Steering Chairs of BIC for their strong encouragement and guidance to organize the conference. We would like to thank BIC 2024 General Chairs for their advice to make possible organization of the BIC 2024. We would like to express special thanks to execute members for their timely unlimited support

BIC 2024 Program Chairs

Ji Su Park, Jeonju University, Korea  
Arun Kumar Sangaiah, VIT University, India  
Jin Wang, Yangzhou University, China  
Pham Van Dai, Swinburne University of Technology, Vietnam

## Organization

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Young-Sik Jeong, Dongguk University, Korea

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Jungho Kang, Baewha Women's University, Korea

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Qun Jin, Waseda University, Japan

Yi Pan, Georgia State University, USA

Hoang Viet Ha, Swinburne University of Technology, Vietnam

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Luis Javier Garcia Villalba, Universidad Complutense de Madrid (UCM), Spain

Neil Yen, University of Aizu, Japan

Le Anh Ngoc, Swinburne University of Technology, Vietnam

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Ji Su Park, Jeonju University, Korea

Arun Kumar Sangaiah, VIT University, India

Jin Wang, Yangzhou University, China

Pham Van Dai, Swinburne University of Technology, Vietnam

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Mihyeon Kim, OSCO, Korea  
Jeonghui Gwak, KI&T, Korea  
yuncheol Kim, TRACOM, Korea  
Seogu Choi, Daebo Communication & Systems Co.,Ltd, Korea  
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Min Choi, Chungbuk National University, Korea  
Le Minh Duc, Head of Information Technology Department, Swinburne Vietnam Alliance  
Truong Cong Duan, Swinburne University of Technology, Vietnam  
Le Minh Duc, Swinburne University of Technology, Vietnam  
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Tran Khanh Ly, Swinburne University of Technology, Vietnam  
Tran Huyen Trang, Swinburne University of Technology, Vietnam

## Invited Speaker 1



### An Efficient Edge Computing Management Mechanism for Sustainable Smart Cities

**Le Anh Ngoc**

Ph.D. Info & Comm. Eng.  
Director at the Swinburne Innovation Space  
Swinburne University of Technology

#### Abstract

Since ancient times, humanity has envisioned a world where people and things connect and interact. The advent of generation mobile systems, the so-called 5 G in the early century, has realized this dream. 5 G can provide network services with extremely-high throughput and extremely-low delay and allows a huge device number to connect based on Internet infrastructure, forming the Internet of Things (IoT). In recent years, IoT has been applied in various fields serving humanity, such as smart cities, smart agriculture, healthcare, education, military, and IoT ecosystems. One of the main challenges of IoT applications is computing solutions to reduce service response times. This talk will introduce an efficient edge computing management mechanism for IoT applications in smart cities. Our mechanismproposes a small database (called an information map) that allows edge computing servers of smart cities to store edge service information. When the mobile end-users move to the new edge server' managed coverage, properties related to the EC service are exchanged between the edge servers. The experiment results have shown that our proposed mechanism improves service response time and energy consumption many times compared to the traditional mechanism. We hope that this mechanismwill be strongly applied to sustainable smart cities in the future.

#### Biography

Dr. Le Anh Ngoc presently holds the position of Director at the Swinburne Innovation Space within Swinburne University of Technology in Vietnam. Concurrently, he leads the Intelligence Systems and Networks Research Group (ISN Group). His previous roles encompass Director of Development Program at Differentiated Automotive Platform (DAP) - FPT Global Automotive & Manufacturing, Vice-Dean of the Faculty of Electronics & Telecoms, Computer Engineering at EPU, and Head of the Communication Network Group at Vinh University's Information Technology Department. Dr. Ngoc has also served as a Researcher at the Telecommunications Networks Laboratory (TENET Lab), Kyungpook National University (KNU) in South Korea.

With a professional trajectory spanning over 25 years, Dr. Le Anh Ngoc has demonstrated expertise in training, research, innovation management, and technology transfer. His diverse research interests encompass Embedded and Intelligent Systems, Communication Networks, the Internet of Things, Image/Video Processing, and AI & Big Data Analysis.

Actively engaging in academia, Dr. Ngoc has contributed significantly to various academic events, assuming roles such as Keynote Speaker, Chair of International Conferences, Founder of the Swinburne Global Hackathon, TPC member, Session Chair, Book Editor, and Reviewer for international conferences and journals. Beyond academia, he serves as a Digital Transformation & IT Consultant/Specialist/Mentor for organizations like the Vietnam-Korea Businessmen and Investment Association (VKBIA), Vietnam - Korea Experts and Intellectuals Association (VKEIA), and Vietnam Innovation Network in Korea (VINK). Dr. Ngoc is accessible via email at [nle@swin.edu.au](mailto:nle@swin.edu.au).

## Invited Speaker 2



### OpenCV DNN on Embedded Systems

**Shiqi Yu**

PhD in Artificial Intelligence

Associate Professor at Department of Computer Science and Engineering Southern University of Science and Technology, Shenzhen, China

#### Abstract

In the evolving field of AI and computer vision, deploying deep learning models on embedded systems is crucial. This talk provides an overview of utilizing the OpenCV DNN module in resource-constrained environments. After a short introduction to OpenCV, the talk will cover the fundamentals of the OpenCV DNN module, focusing on deploying pre-trained models on devices like some low-cost ARM development boards with NPU. Attendees will learn the workflow for deploying models using OpenCV DNN, and learn to create innovative and efficient AI solutions with the help of OpenCV.

#### Biography

Dr. Yu Shiqi is an Associate Professor at the Department of Computer Science and Engineering at the Southern University of Science and Technology (SUSTech). He received his Bachelor's degree in Computer Science and Technology from Chu Kochen Honors College, Zhejiang University in 2002 and his Ph.D. in Pattern Recognition and Intelligent Systems from the Institute of Automation, Chinese Academy of Sciences, in 2007. His main research areas include gait recognition and object detection. In the field of gait recognition, he created the CASIA-B gait database, which has been widely used in gait recognition, and the OpenGait open-source project, which has become a major algorithm evaluation framework. He has published almost 100 papers in gait recognition at IEEE TPAMI, IEEE TIFS, IEEE TBIOM, PR, CVPR, ECCV, IJCB, etc. In terms of object detection, his face detection algorithm was adopted by numerous enterprises. Additionally, he received the second prize of the Guangdong Provincial Science and Technology Award in 2021 for his work in remote sensing image processing. Dr. Shiqi Yu is also one of the board members of OpenCV Foundation, and is leading a development team for OpenCV.



# PROGRAM Schedule for BIC 2024

Day 1, August 12, 2024		
Time	Min	HALL A
09:00-09:30	30	Registration
09:30-10:40	70	Session A-1 BIC Chair: Dr. Pham Thi Kim Dung
10:40-10:50	10	Coffee Break
10:50-12:00	70	Session A-2 BIC Chair: Dr. Pham Van Dai
12:00-13:00	60	Lunch
13:00-13:55	60	Welcome Speech Dr. Hoang Viet Ha
		Opening speech Prof. James J. (Jong Hyuk) Park
		Opening speech Prof. Ly Hoang Tung
		Keynote Speech: Prof. Shiqi Yu "OpenCV DNN on Embedded Systems"  Keynote Speech: Prof. Ly Hoang Tung "Vietnam's policies and strategies on Big Data and AI"  Chair: Prof. Kwang-il Hwang
13:55-14:05	10	Coffee Break

**The 8th The International Conference on Big data, IoT, and Cloud Computing (BIC 2024)**

Time	Min	HALL A	HALL B
14:05-15:15	70	Session A-3 BIC Chair: Dr. Khoa Nguyen Dang	*Industry Forum (in detail below)
15:15-15:25	10	Coffee Break	
15:25-16:35	70	Session A-4 BIC Chair: Dr. Dinh Truong Duy	
16:35-17:45	70	Break	
17:45-19:00	75	Banquet	

**Day 2, August 13, 2024**

Time	Min	HALL A
09:40-10:00	20	<b>Registration</b>
10:00-11:20	40	<b>Session A-5 BIC</b> <b>Chair: Dr. Le Anh Ngoc</b>
11:20-11:30	10	<b>Break</b>
11:30-13:00	90	<b>Lunch (Only Committee)</b>
13:00-15:00	120	<b>Organizing Committee Meeting I</b>
15:00-17:00	120	<b>Local Arrangement Committee Meeting I</b>

**Day 3, August 14, 2024**

Time	Min	HALL A
09:00-10:30	90	<b>Organizing Committee Meeting II</b>
10:30-12:00	90	<b>Local Arrangement Committee Meeting II</b>

1. A paper presentation should be made by one of authors of the paper for A paper presentation should be made by one of authors of the paper for 15 minutes (12 minutes for the presentation itself and 3 minutes for Q/A).
2. All speakers of each session should meet the session chair at their room 15 minutes before the session begins.
3. Windows 10 laptops running the Adobe Reader and Microsoft Office for paper presentations will be prepared. Please prepare for your presentation.
4. All online sections are played recorded video only.
5. For Q&A in the online section, please email the author.

Industry Forum, August 12, 2024		
Time	Min	HALL B
13:55-14:00	5	Introduction
14:05-14:15	10	Opening speech Chair: Mr. Ngo Tuan Anh
14:15-15:45	90	<p>Keynote: Mr. Tran Minh Quan</p> <p>Keynote: Mr. Le Anh Binh “Solutions help businesses comply with personal data protection”</p> <p>Keynote: Mr. Doan Huu Hau</p> <p>Keynote: Mr. Tran Anh Tuan “Recover and Protect against Ransomware using AWS”</p> <p>Keynote: Mr. Ngo Viet Khoi “Raise awareness about legal and ethical responsibilities in the AI era”</p> <p>Keynote: Mr. Nguyen Anh Tu “Securing Education data in the Wake of AI”</p>
15:45-15:55	10	Coffee Break
15:55-16:25	30	<p>Executive discussion:</p> <ul style="list-style-type: none"> <li>- Mr. Tran Minh Quan</li> <li>- Mr. Ngo Tuan Anh</li> <li>- Mr. Tran Anh Tuan</li> <li>- Mr. Nguyen Anh Tu</li> <li>- Mr. Ngo Viet Khoi</li> <li>- Mr. Doan Huu Hau</li> <li>- Prof. Shiqi Yu</li> </ul>
16:25-16:30	5	Ending

# DETAILED SCHEDULE FOR The 8th The International Conference on Big data, IoT, and Cloud Computing (BIC 2024)

## Day 1, August 12, 2024 (Monday)

**09:00-09:30 Registration**

**09:30-10:40 Session A-1 BIC**

**(Chair: Dr. Pham Thi Kim Dung)**

1. **Analysis and prediction of real estate prices in HaNoi using Machine Learning**  
*Hang Vu Thi , Trung Tran, Anh-Ngoc Le*
2. **Enhancing Nonverbal Communication in Online Synchronous Discussions**  
*Chun Hyeok Gwon, Ji Su Park, Jin Gon Shon*
3. **Analyzing WZT images to predict Early Dementia in older adults based on Deep Learning**  
*Kyung-yeul Kim, Young-bo Yang, Mi-ra Kim, Jihie Kim, Ji Su Park*
4. **Autoscaling Scheme Using Multi-Metric Information with KEDA in Kubernetes**  
*Hyunsu Jeong, Joon-Min Gil*
5. **Differential Privacy for Personalized Federated Learning Based Hypernetworks**  
*Qingyu Tan, Yan Li, Byeong-Seok Shin*

**10:40-10:50 Coffee Break**

**10:50-12:00 Session A-2 BIC**

**(Chair: Dr. Pham Van Dai)**

1. **Information and Data Security Management in Digital transformation: Research on: Case study for Shopee Vietnam**  
*Huy Anh Nguyen, Nhat Nguyen Pham Hoang, Duc Cuong Pham, Mai Phunong Nguyen Xuan, Thien Nhi Le*
2. **Blind signature scheme with mutual authentication using Schnorr ZKP on Edwards Elliptic Curves**  
*Hanh Tran Thi, Nghi Nguyen Van, Ngoc Le Anh, Hung Dinh Van*
3. **Using Machine Learning Methods in Predicting Employee Churn Based on Human Resources Data**  
*Truong Cong Doan, Mai Xuan Dat, Le Anh Ngoc*
4. **Robot operating system: architecture from features and layers**  
*Eru Choi, Min Choi*
5. **Enhancing iot network security through federated learning: a novel approach to distributed threat detection and mitigation**  
*Byung Hyun Jo, Jimin Ha, Jisu Park, Junggho Kang, Jong hyuk Park*

**12:00-14:00 Lunch**

**13:00-14:00 Keynote Speech**

(Chair: Prof. Kwang-il Hwang)

**Prof. Shiqi Yu**

**"OpenCV DNN on Embedded Systems"**

**Keynote Speech: Prof. Ly Hoang Tung**

**"Vietnam's policies and strategies on Big Data and AI"**

**13:55-14:05 Coffee Break**

**14:05-15:15 Session A-3 BIC**

(Chair: Dr. Khoa Nguyen Dang)

1. **A REVIEW OF DEEP LEARNING IN SMART GREENHOUSE**  
*Trang Ha, Vu Son Tung, Ngoc Le*
2. **The impact of artificial intelligence on job security and affective organizational commitment: a study of software companies in viet nam**  
*Vuong ThiNhung, Trinh Thanh, Le Anh Ngoc*
3. **A study on service-aware resource management for qos in hpc cloud**  
*A-young Son*
4. **Monitoring Urban Streets Using Deep Learning with Geo-Referenced Images**  
*Yash Bitla, Harshita Poojary, Seon Ho Kim*

**15:15-15:25 Coffee Break**

**15:25-16:35 Session A-4 BIC**

(Chair: Dr. Dinh Truong Duy)

1. **Improve the accuracy of Vietnamese text line detection in scene images based on the integration of contextual attention mechanism and deep neural layers**  
*Thi-Thanh-Tan Nguyen*
2. **Advanced Session-Based Music Recommendation System Using Transformer-Based Neural Network with Encoder-Decoder Strategy**  
*Sophort Siet, Sony Peng, Sadriddinov Ilkhomjon Rovshan, Mi-Sun Kang, Doo-Soon Park*
3. **The Transformative Power of the Internet of Things: A Comprehensive Exploration**  
*Ngoc Phan-Thi-Thanh, Ngoc Le-Anh, Tan Nguyen-Thi-Thanh*
4. **Design of a Unified Messenger with Enhanced Security Features**  
*Sangsoo Park, Zhang Han, Bonghwan Kim, Yongjun Jon, Taeyoung Byun*

**16:35-17:45 Break**

**17:45-19:00 Banquet**

## **Day 2, August 13, 2024 (Tuesday)**

**09:40-10:00 Registration**

**10:00-11:20 Session A-5 BIC**  
**(Chair: Dr. Le Anh Ngoc)**

- 1. Hydroponic Cultivation of Wasabi Using Smart Farm Technology**  
*Jong Hyeok Lee, Seong Min Kim, Wolyoung Kim, Hyun Kil Cho, Kihak Lee, Seo Kyu Kim, Tae-Young Byun, Bonghwan Kim*
- 2. Human-Centered Prompt Design with Structured Healthcare Knowledge for Generative Dialogue Agents**  
*Qu Deng, Jong Hyuk Park*
- 3. Comparative Performance of Deep Learning Models in Detecting Invasive Ductal Carcinoma**  
*Nguyen Nang Hung Van, Phuc Hao Do, Tran Duc Le, Ngo Van Uc, Truong Duy Dinh, Van Dai Pham*
- 4. GAN-Based Anomaly Detection System for Smart City**  
*Abir El Azzaoui, Panos Nasiopoulos, Jong Hyuk Park*

**11:20-11:30 Break**

**11:30-13:00 Lunch(Only Committee)**

**13:00-15:00 Organizing Committee Meeting I**

**15:00-17:00 Local Arrangement Committee Meeting I**

## **Day 3, August 14, 2024 (Wednesday)**

**09:00-10:30 Organizing Committee Meeting II**

**10:30-12:00 Local Arrangement Committee Meeting II**

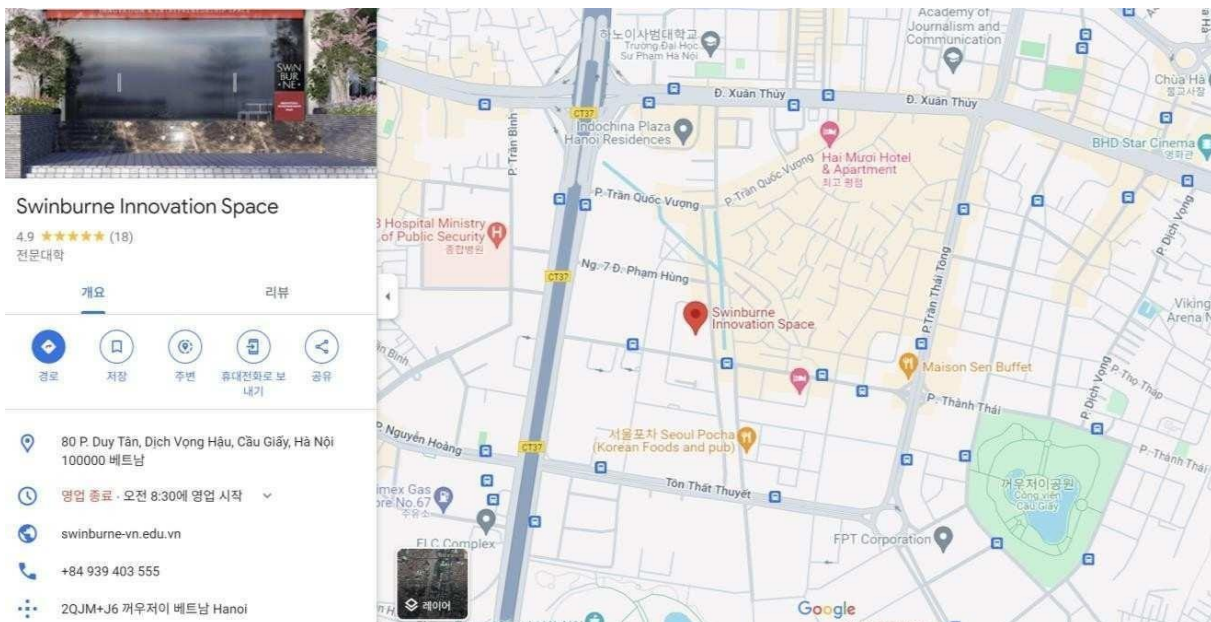


## Conference Venue

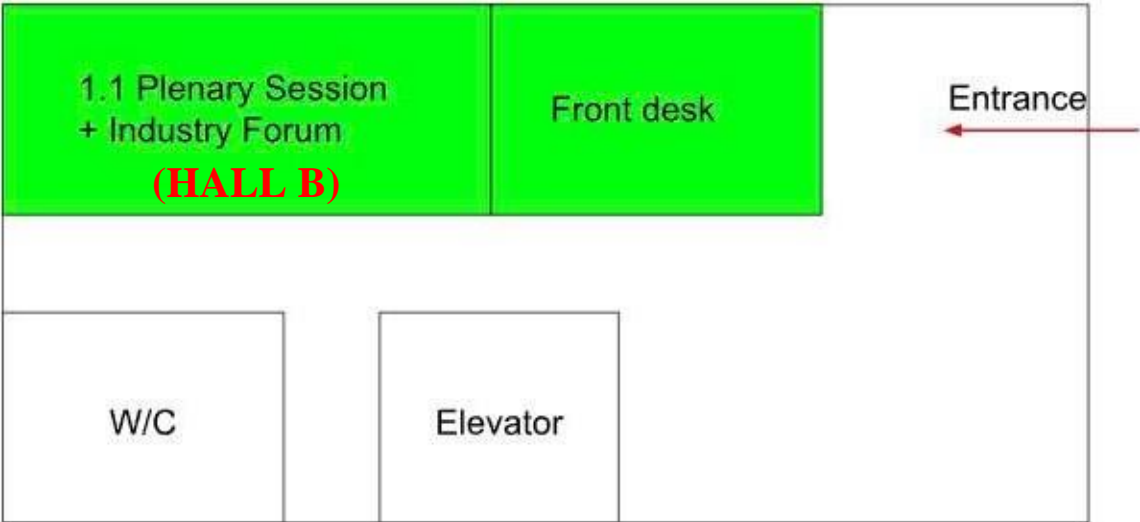


### Swinburne Innovation Space, Vietnam

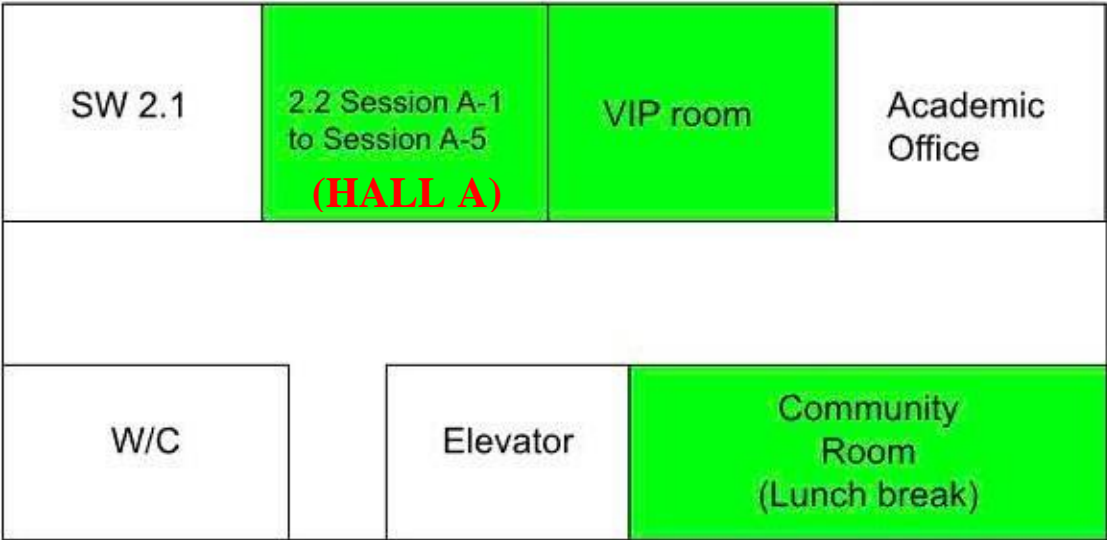
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Level 1



Level 2







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